Notes on some of the British Nepticulidae II

By A. M. Emmet

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Work may have been done on these lines with other metallic scaled lepidoptera such as the *Amblypodia* (Lycaenidae) which could be applied to the group under discussion.

In conclusion my estimate, for what it is worth, is that there are certainly four species, *aurella, nitens, fragariella* and *dulcella.* Possibly *gei,* too, is a good species; or it may be the same as *nitens* (the senior name) or; it may just be the name given to any of the group when they happen to feed on *Geum*!

(2) *poterii Stainton*
**tengstroemi* Nolken
**serella* Stainton

It would not surprise me at all if *serella* was found to be synonymous with *poterii.* On the other hand *tengstroemi,* which I only know from mines in the herbaria of Hering and Waters, must surely be different. The mine more closely resembles that of *ulmariae* Wocke.

(3) *ulmivora Fologne*
**ulmicola* Hering
ulmifoliae Hering

I include *ulmifoliae* under this head, though it is accepted by Johansson. The three will be dealt with comprehensively under the heading *Ulmus* below, where it is demonstrated that they constitute a single species.

(4) *oxyacanthella* Stainton
**aeneella* Heinemann

What I shall say here is provisional and I hope that readers both in this country and on the continent, will proffer their comments and opinions. My view is that *aeneella* is a distinct species but that it has become confused with *oxyacanthella* when the latter feeds on apple.

Heinemann (1862) describes *aeneella* as follows (my translation):—"Forewings slightly metallic brownish with a faint violet gloss at the apex. Head ochreous yellow. Eyecaps and collar yellowish". He adds that the larva feeds in October in the leaves of apple. Now this does not sound like *oxyacanthella* which has deep purple-fuscous wings, the purple deepest towards the apex. Heinemann places the insects in different groups, *aeneella* in the group characterised by possessing long antennae, and *oxyacanthella* in that with short antennae.

There is a series labelled *aeneella* in the general collection at the British Museum (Natural History); all the specimens were bred or captured in Germany. The series is made up of three species as follows — (a) Two specimens answering exactly to Heinemann's description, except that the antennae

are missing so that their length cannot be gauged. These are from Stainton's collection and were received by him from Staudinger. The forewings are pale golden brown without any hint of purple; one specimen has a noticeable violet gloss at the apex, but the wings as a whole are not glossy. (b) Two specimens named *aeneella* by Staudinger in 1897 but with purple-fuscous forewings, and resembling *oxyacanthella* in all respects. They had not been included in Stainton's collection and from the data it appears they were received in this country after Stainton's death. (c) About ten specimens of a species unknown to me. They are from the Paravicini collection and are dated 1906, 1923 and 1926. They were evidently bred, as they are accompanied by their cocoons, though the foodplant is not stated on the labels. The forewings are glossy metallic golden, the apical reflections being golden, not violet. They also differ from Heinemann's description of *aeneella,* and from the specimens from Stainton's collection, in respect of the strikingly brilliant golden gloss of the forewings.

This suggests to me that before the end of the nineteenth century continental entomologists were confusing *aeneella* and *oxyacanthella.* It could well happen if the former is a scarce and unfamiliar insect and its mine and that of *oxyacanthella* when on apple became confused. Adults reared from such mines would then be assigned to *aeneella,* even if their superficial characters were those of *oxyacanthella.*

I find support for my theory in Hering (1957). He describes the mine of *oxyacanthella* on *Crataegus, Mespilus* and *Prunus,* but not on *Malus.* But under *aeneella* on *Malus* he writes (my translation):—"It is not yet certain whether this species is specifically distinct from *S. oxyacanthella* Stainton, which lives in similar mines on *Crataegus*". The species described as *aeneella* by Heinemann and the specimens from Stainton's collection are totally different in appearance from *oxyacanthella* and must surely be specifically distinct.

Stigmella aeneella Heinemann was introduced to the British list by Mr S. C. S. Brown (1964) after mines in apple-leaves from his garden in Bournemouth had been identified as belonging to that species by the late Mr A. G. Carolsfeld-Krausé of Denmark. Mr Brown (*l.c.*) refers to similar mines in the herbarium compiled by Professor E. G. R. Waters and preserved in the Hope Department of Entomology at the University Museum, Oxford. I have seen the specimens reared from these mines; they answer to the description of *oxyacanthella* and were determined as such by Waters. References to *oxyacanthella* feeding on apple are to be found *passim* in our literature and no one used to question the identity of the resulting adults. Mines of the *oxyacanthella* type are common both on wild and cultivated apple in all the counties in which I have collected during the autumn in south-east England. Yet I have never heard of or seen a

specimen bred from apple in this country which answered to the description of *aeneella*.

So I conclude as I began by suggesting that *aeneella* is a good species but one that has been lost, and that *oxyacanthella* when it feeds on apple has been made to do duty for it.

(5) *anguilifasciella* Stainton.
**atricollis* Stainton.

The eight British species of *Ectoedemia* with black forewings bearing a central silver fascia are very similar and present problems of determination. Moths of this group bred from larvae feeding in leaves of hawthorn, apple, and (less commonly) other rosaceous trees have been referred to *atricollis*, while those bred from rose and (less commonly) salad burnet have been referred to *angulifasciella*. In this context Beirne (1945) writes as follows: "A number of [genitalia] preparations of *angulifasciella* and *atricollis* were examined but no reliable difference could be found. The differences figured by Petersen (1930) can be attributed to distortions of genitalia and differences in mounting. The two forms are probably biological races of the one species and are here included as being synonymous." Johansson (1971) may be following Beirne's lead. However, Meyrick (1928), Ford (1949), Hering (1957), Heslop (1965) who was advised by the late A. G. Carolsfield-Krausé, and the new edition of Kloet and Hinck's check-list all show the two as separate species. Which view is correct?

First let us assess the degree of weight which should be accorded to Beirne's opinion when he pronounces on the Nepticulidae. His purpose in describing the genitalia of that family was to complete the work of F. N. Pierce, with whom he had already collaborated in *The Genitalia of the British Rhopalocera and the Larger Moths* (1941). After Pierce's death, the Nepticulidae remained with the genitalia still undescribed, so Beirne described them. In doing so he fulfilled a valuable service. His approach, however, was that of a museum worker, examining dead imagines collected by other persons. He himself had no special knowledge of the group as is shown by the fact that in *A List of the Micro-lepidoptera of Ireland* (1941) he gives personal records of only four species of *Nepticula*! These did not include either *angulifasciella* or *atricollis* and he may well have been completely ignorant of their biology. He therefore had no right to make a dogmatic pronouncement in a field where his knowledge was so one-sided.

Let us now compare the biology of *angulifasciella* and *atricollis* and see what conclusions can be drawn.

	angulifasciella	*atricollis*
Foodplants	*Rosa* spp. and *Poterium sanguisorba*	*Crataegus*, *Malus* spp. *Pyrus communis*, *Prunus avium*.
Larval season	Mid-October till early November.	September till mid-October.
Egg	Laid on the underside of the leaf, usually touching the midrib.	Laid on the underside of the leaf, usually about 1 mm from the margin.
Mine	At first a highly contorted gallery filled with light purplish brown frass deposited in a more or less coiled formation. The uneaten areas of leaf between the contortions of the gallery also turn purplish, making the early mine appear like a mottled purplish spot. Later the mine may assume a somewhat straighter course, often directed towards the leaf-margin, which it then follows closely. The gallery usually widens gradually into a blotch, but in some cases the transition is abrupt. In this stage the frass is at first black and almost solid, but later it is more dispersed. In some examples the mine stays in the centre of the leaf and the larva advances in a series of tight 'S' turns which may merge into a blotch.	The early gallery almost always follows the margin of the leaf and so is relatively straight in its course. It is filled with irregularly disposed brown frass which does not stain the leaf. The gallery phase is shorter and the blotch is larger than in most examples of *angulifasciella*.
Larva (a) young	Ochreous yellow with a chain of large oval dark spots on the venter, their broader axis in the lateral plane.	Whitish, with less conspicuous dark spots on the venter.
(b) Full grown	Greenish white, with dorsal vessel darker green. Head reddish brown, prothoracic plate somewhat darker, a chain of small oval dark spots on the venter, their broader axis in the longitudinal plane.	Whitish, with dorsal vessel often reddish. Head and prothoracic plate black. A chain of ventral dark spots which are pear-shaped on the thoracic segments and linear in the abdominal segments.

Cocoon	Dark greenish brown, spun (in captivity) amongst moss as soon as the larva has vacated the mine. In this cocoon the larva remains unchanged for a considerable period, perhaps throughout the winter". Stainton (1855).	Black, spun on or just below the surface of the soil. In captivity none was spun in the moss covering the earth in their container. According to Tutt (1899. p. 171) *atricollis* and several other Nepticulidae "hybernate in the larval stage, but appear to leave their hybernacula to spin their cocoons in the spring". See also Ent Record 83: 171.
Imaginal season	July	June.

Added to the differences noted above are discrepancies in distribution. I am not considering the range of each insect, since information here is still inadequate: I am considering examples of their distribution in south-east England where both are locally common. In a garden at Biggin Hill in Kent, *atricollis* is plentiful on the apple-trees and hawthorns, but *angulifasciella* is absent from the roses: whereas in a wood at Debden near my house in north Essex *angulifasciella* was plentiful in the roses last autumn, but there was no sign of *atricollis* on the hawthorns.

Thus we see that *angulifasciella* and *atricollis* fly in different months, lay their eggs in different positions on different foodplants, have differently marked larvae feeding in different formed mines, have differently coloured cocoons spun in different environments at a different season, overwintering in a different manner and in some cases frequent different localities. The male genitalia, however, appear alike. If for this reason we are to say that *atricollis* is a form of *angulifasciella,* then Ted Heath is a form of the heath fritillary.

(6) *arcuatella* Herrich-Schäffer
**rubivora* Wocke

All British entomologists have regarded the two as distinct and Beirne in (as far as I know) authentic drawings shows clear differences in the genitalia. Consequently Johansson's view that they are one and the same species comes as a surprise. I do not know the grounds on which he bases his opinion. During last autumn I made two independent descriptions of the larvae and mines, based on material from two different localities for each species. The similarities and differences I observed are tabulated below.

	arcuatella	*rubivora*
Foodplant	*Fragaria*	*Rubus*, especially *R. caesius*
Larval season	Late August to early October.	Late September to early November.

(*to be continued*)